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GARLICK HARRISON & MARKISON			EXAMINER	
P.O. BOX 160727			AJAYI, JOEL	
AUSTIN, TX 78716-0727			ART UNIT	PAPER NUMBER
			2617	
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			08/09/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/660,849

Applicant(s)

PALM ET AL.

Examiner

Joel Ajayi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This action is in response to Applicant's amendment filed on May 08, 2007. **Claims 1-21** are still pending in the present application. **This action is made FINAL.**

#### ***Response to Arguments***

Applicant's arguments filed May 08, 2007 have been fully considered but they are not persuasive.

The argument features a plurality of recorded relative angular positions; plurality of recorded received strengths; to determine relative radio positions of the plurality of WAPS within the WLAN.

The examiner respectfully disagrees with the applicant's statement and asserts that Regnier et al. discusses that each weight vector represents an antenna directional angle and contains a value, as the weight vectors are adjusted a signal quality metric is monitored/recorded (paragraph 42, lines 8-16). Due to the controllable nature and the independence of the weight control components for each antenna element, only forward link signals arriving from a direction that is more or less in the location of the base station are optimally received (paragraph 40, lines 5-10), therefore determining the location of the base station. Determining the signal angle of arrival and signal quality metrics leads to the location, in this instance the location of the base station (paragraph 72, lines 17-20).

In view of the above, the rejection using Regnier are maintained as repeated below.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 1-21** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Abramov et al.** (U.S. Patent Number: **6486832**) in view of **Regnier et al.** (U.S. Patent Application Number: **2003/0222818**).

Consider **claim 1**; Abramov clearly discloses a method for operating a Wireless Local Area Network (WLAN) serviced by a plurality of Wireless Access Points (WAPs), at least some of the plurality of WAPs having directional antennas (fig. 5, column 4, line 55 - column 5, line 8; column 7, lines 30-34), the method comprising: performing a plurality of beaconing operations,

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each of the beaconing operations corresponding to a respective WAP of the plurality of WAPs such that during the beaconing operation the respective WAP transmits a substantially constant power beacon (column 4, line 55 - column 5, line 8; column 7, lines 3-6); during each beaconing operation, at least one non-beaconing WAP of the plurality of WAPs that has a directional antenna: listening for the transmitted beacon (column 4, line 55 - column 5, line 8); directing an approximate maximum gain vector (high gain position) of the directional antenna toward the transmitted beacon (column 4, line 55 - column 5, line 8); determining a relative angular position of the approximate maximum gain vector (high gain position) (column 4, line 55 - column 5, line 8); measuring a received strength of the transmitted beacon (column 4, line 55 - column 5, line 8; column 6, lines 37-40).

Except:

Recording the relative angular position of the approximate maximum gain vector and the received strength of the transmitted beacon; and processing a plurality of recorded relative angular positions of the approximate maximum gain vectors and a plurality of recorded received strengths of the transmitted beacons to determine relative radio positions of the plurality of WAPs within the WLAN.

In the same field of endeavor Regnier clearly discloses recording the relative angular position of the approximate maximum gain vector (optimum) and the received strength of the transmitted beacon (paragraph 33, lines 1-6; paragraph 54, lines 1-25); and processing a plurality of recorded relative angular positions of the approximate maximum gain vectors and a plurality of recorded received strengths of the transmitted beacons to determine relative radio positions of

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the plurality of WAPs within the WLAN (paragraph 16, lines 1-5; paragraph 33, lines 1-6; paragraph 54, lines 1-25).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the teachings of Regnier into the method of Abramov in order to provide beam forming transmission and reception capabilities.

Consider **claim 9**; Abramov clearly discloses a Wireless Local Area Network (WLAN) processing component comprising: a network interface that interfaces the WLAN processing component to a plurality of Wireless Access Points (WAPs) of the WLAN, at least some of the plurality of WAPs having directional antennas (fig. 5, column 4, line 55 - column 5, line 8; column 7, lines 30-34); and a processor communicatively coupled to the network interface that executes a group of instructions (column 3, lines 53-61) comprising: a plurality of instructions that cause the WLAN processing component to direct the plurality of WAPs to perform a plurality of beaconing operations, each of the beaconing operations corresponding to a respective WAP of the plurality of WAPs such that during the beaconing operation the respective WAP transmits a substantially constant power beacon (column 4, line 55 - column 5, line 8; column 7, lines 3-6); a plurality of instructions that cause the WLAN processing component to direct at least one non-beaconing WAP of the plurality of WAPs that has a directional antenna, during each beaconing operation, to: listen for the transmitted beacon (column 4, line 55 - column 5, line 8); direct an approximate maximum gain vector (high gain position) of the directional antenna toward the transmitted beacon (column 4, line 55 - column 5, line 8); determine a relative angular position of the approximate maximum gain vector (high gain position) (column

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4, line 55 - column 5, line 8); measure a received strength of the transmitted beacon (column 4, line 55 - column 5, line 8; column 6, lines 37-40).

Except:

Recording the relative angular position of the approximate maximum gain vector and the received strength of the transmitted beacon; and processing a plurality of recorded relative angular positions of the approximate maximum gain vectors and a plurality of recorded received strengths of the transmitted beacons to determine relative radio positions of the plurality of WAPs within the WLAN.

In the same field of endeavor Regnier clearly discloses recording the relative angular position of the approximate maximum gain vector (optimum) and the received strength of the transmitted beacon (paragraph 33, lines 1-6; paragraph 54, lines 1-25); and processing a plurality of recorded relative angular positions of the approximate maximum gain vectors and a plurality of recorded received strengths of the transmitted beacons to determine relative radio positions of the plurality of WAPs within the WLAN (paragraph 16, lines 1-5; paragraph 33, lines 1-6; paragraph 54, lines 1-25).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the teachings of Regnier into the method of Abramov in order to provide beam forming transmission and reception capabilities.

Consider **claim 17**; Abramov clearly discloses a Wireless Local Area Network (WLAN) processing component comprising: a network interface that interfaces the WLAN processing component to a plurality of Wireless Access Points (WAPs) of the WLAN, at least some of the plurality of WAPs having directional antennas (fig. 5, column 4, line 55 - column 5, line 8;

column 7, lines 30-34); and means for performing a plurality of beaconing operations, each of the beaconing operations corresponding to a respective WAP of the plurality of WAPs such that during the beaconing operation the respective WAP transmits a substantially constant power beacon (column 4, line 55 - column 5, line 8; column 7, lines 3-6); means for, during each beaconing operation, at least one non-beaconing WAP of the plurality of WAPs that has a directional antenna: listening for the transmitted beacon (column 4, line 55 - column 5, line 8); directing an approximate maximum gain vector (high gain position) of the directional antenna toward the transmitted beacon (column 4, line 55 - column 5, line 8); determining a relative angular position of the approximate maximum gain vector (high gain position) (column 4, line 55 - column 5, line 8); measuring a received strength of the transmitted beacon (column 4, line 55 - column 5, line 8; column 6, lines 37-40).

Except:

Recording the relative angular position of the approximate maximum gain vector and the received strength of the transmitted beacon; and means for processing a plurality of recorded relative angular positions of the approximate maximum gain vectors and a plurality of recorded received strengths of the transmitted beacons to determine relative radio positions of the plurality of WAPs within the WLAN.

In the same field of endeavor Regnier clearly discloses recording the relative angular position of the approximate maximum gain vector (optimum) and the received strength of the transmitted beacon (paragraph 33, lines 1-6; paragraph 54, lines 1-25); and means for processing a plurality of recorded relative angular positions of the approximate maximum gain vectors and a plurality of recorded received strengths of the transmitted beacons to determine relative radio



positions of the plurality of WAPs within the WLAN (paragraph 16, lines 1-5; paragraph 33, lines 1-6; paragraph 54, lines 1-25).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the teachings of Regnier into the method of Abramov in order to provide beam forming transmission and reception capabilities.

Consider **claims 2 and 10**; the combination above clearly discloses that transmitting the substantially constant power beacon includes transmitting the beacon omni directionally (Regnier, paragraph 6, lines 1-4).

Consider **claims 3, 11, and 18**; the combination above clearly discloses determining that wireless coverage within a premises serviced by the plurality of WAPs is deficient in at least one location of the premises; and determining a repositioning of at least one of the plurality of WAPs to remedy the deficiency (Regnier, paragraph 33, lines 1-6; paragraph 42, lines 1-23).

Consider **claims 4 and 12**; the combination above clearly discloses that the repositioning of at least one of the plurality of WAPs to remedy the deficiency includes: estimating relative physical positions of the plurality of WAPs based upon the relative radio positions of the plurality of WAPs; and based upon estimates of the relative physical positions of the plurality of WAPs, determining a physical repositioning of the at least one of the plurality of WAPs that will remedy the deficiency (Regnier, paragraph 33, lines 1-6; paragraph 38, lines 1-13; paragraph 42, lines 1-23).

Consider **claims 5, 13, and 19**; the combination above clearly discloses that the repositioning comprises: receiving relative physical positions of the plurality of WAPs; correlating the relative physical positions of the plurality of WAPs with the relative radio

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positions of the plurality of WAPs; determining the repositioning of at least one of the plurality of WAPs to remedy the deficiency is based upon the correlation of the relative physical positions of the plurality of WAPs with the relative radio positions of the plurality of WAPs (Regnier, paragraph 33, lines 1-6; paragraph 38, lines 1-13; paragraph 42, lines 1-23).

Consider **claims 6, 14, and 20**; the combination above clearly discloses that the relative radio positions of the plurality of WAPs within the WLAN: determining that wireless coverage within a premises serviced by the plurality of WAPs is deficient in at least one location of the premises; and determining an alteration of an antenna gain pattern of at least one of the plurality of WAPs having a directional antenna to remedy the deficiency (Regnier, paragraph 33, lines 1-6; paragraph 38, lines 1-13; paragraph 42, lines 1-23).

Consider **claims 7 and 15**; the combination above clearly discloses that the relative radio positions of the plurality of WAPs within the WLAN: determining that wireless coverage within a premises serviced by the plurality of WAPs is deficient in at least one location of the premises; and determining an alteration of transmit power of at least one of the plurality of WAPs having a directional antenna to remedy the deficiency (Regnier, paragraph 33, lines 1-6; paragraph 42, lines 1-23).

Consider **claims 8, 16, and 21**; the combination above clearly discloses that the relative radio positions of the plurality of WAPs within the WLAN: determining that wireless coverage within a premises serviced by the plurality of WAPs is deficient in at least one location of the premises; determining that an additional WAP is required to remedy the deficiency; and recommending a placement of the additional WAP with respect to the relative radio positions of

the plurality of WAPs within the WLAN (Regnier, paragraph 33, lines 1-6; paragraph 37, line 1 – paragraph 38, line 13).

***Conclusion***

Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Joel Ajayi whose telephone number is (571) 270-1091. The Examiner can normally be reached on Monday-Thursday from 7:30am to 5:00pm and Friday 7:30am to 4:00 pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Charles Appiah can be reached on (571) 272-7904. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

*Joel Ajayi*

August 06, 2007



CHARLES N. APPIAH  
SUPERVISORY PATENT EXAMINER